

New Record of the Damsel fish, *Chromis analis* (Pisces:Pomacentridae) from Korea

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During the course of taxonomic study on the genus *Chromis* from the southern coastal waters off Cheju Island during April-August 1993, eight specimens have been classified as *Chromis analis*(Cuvier) for the first time in Korea, and thus described here as new to the Korean fish fauna.

Damsel fish, *Chromis analis* was originally described by Cuvier and Valenciennes(1830) from Ambonia, Indonesia. *Chromis notatus* is the only species to date in the genus *Chromis* distributed around Korean waters, according to Chyung(1977).

Chromis analis is distinguished from *Chromis notatus* by three spiniform procurrent caudal rays, a deeper body and a golden or brown yellowish body and fin color. *Norang-ja-ri-dom* is proposed as the Korean name for *Chromis analis*.

Introduction

The damselfish genus *Chromis*, the largest of the Pomacentridae is distributed mainly in the tropical and subtropical waters of the world. This genus comprises of approximately 50 species which inhabit both Atlantic and Indo-Pacific coral reefs (Allen, 1975). Their principal habitats are a coral reefs or rocky bottoms which provide shelter from predators and substrata for their demersal ova(Randall, 1988).

Most of the genus *Chromis* exhibit distinct habitat preferences, varying widely from species to species (Limbaugh, 1964).

Cuvier (1814) defined the Pomacentrid genus *Chromis* on the basis of its dorsal spines XIII~XIV, soft portion of dorsal fin 1.7~3.9 in base of spinous portion, lateral line ending beneath soft portion of dorsal fin, head fully scaled except for a narrow region in front of snout and side of snout around each nostril, nearly all species have two or three spiniform procurrent caudal rays and hind edge of preopercle is usually entire (Randall and Swerdloff, 1973; Allen, 1975).

Chromis analis was originally described by Cu-

vier and Valenciennes (1830) as *Heliases analis* on the basis of specimens from Ambonia, Indonesia.

The purpose of this study is to describe with illustrations eight specimens of *Chromis analis* as new to the Korean fish fauna.

Materials and Methods

Specimens used were those collected by fishermen and also by using SCUBA gear near Seogwipo and Mosulpo of Cheju Island, Korea from April to August, 1993. The collected specimens were stored at -70°C in a deep freezer.

Terminology follows Randall *et al.* (1981) and Nakabo (1993) explanations for the keys and diagnosis.

Measurements and counts were made according to the methods of Randall and McCarthy (1988). Specimens were measured with vernier calipers to the nearest millimeter under and then fixed in 10 % formalin solution. The lateralis system of head, margin of suborbital and preopercle margins are important for the classification of genus *Chromis*, were observed by the staining method of Kawa-

mura and Hosoya (1991).

The present specimens are deposited at the Ichthyological laboratory, Department of Marine biology, National Fisheries University of Pusan, NFUP 04130~04137.

Results and Discussion

Chromis analis (Cuvier), 1830
(Fig. 1)

New Korean name: *Norang-ja-ri-dom*

Heliases analis Cuvier in Cuvier and Valenciennes, 1830:496 (Type locality: Ambonia, Indonesia).

Material examined: NFUP04130~04137, 8 specimens, 82.8~102.4mm in standard length (SL), Seogwipo, Mosulpo in Cheju-Island, Korea, April-August, 1993.

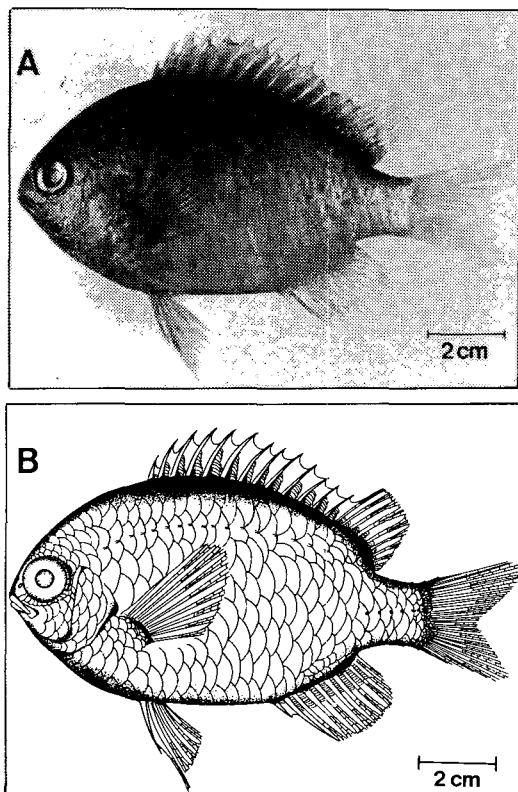


Fig. 1. *Chromis analis* (Cuvier), 102.4mm SL, collected from Cheju-Island, Korea, lateral view.

A. A live specimen; B. An illustration figure

Diagnosis: Measurements and counts of *Chromis analis* are shown in Table 1:2. D. XIII, 12~13 (usually 12); A. II, 11~13 (usually 12); P. 18~20 (usually 19); upper and lower procurrent spiniform caudal rays 3/3; tubed lateral-line scales 18~19; posterior midlateral pored scales in continuous series 7~11; gill rakers 6-7+18-20; branchiostegal rays 6; predorsal bones 3; vertebrae 11+15 (including urostyle bone); body moderately deep in the genus *Chromis*.

Description: Body relatively deep, the depth 53.1~58.4% SL, and compressed; head length 28.4~32.6% SL; eye diameter 10.0~11.4% SL; snout short, 5.6~7.4% SL; interorbital space convex, the least fleshy width 10.7~13.0% SL; caudal peduncle deeper than long, the minimum depth 15.3~16.5% SL, the length (measured horizontally from rear base of anal fin) 10.3~14.9% SL (Table 2).

Anterior nostril ovate located anterior to edge of pupil three-fifth distance from edge of orbit to front of snout; posterior nostril very small; supraorbital pores small. Sensory pores on head very small except for anterior nasal opening (Fig. 2, A).

Mouth terminal, oblique (forming an angle of about 30° to the horizontal axis of head and body), and small, the upper jaw length 8.0~9.9% SL. Jaws with an outer row of moderately large and two irregular inner rows of much smaller conical teeth anteriorly (Fig. 2, B).

Free margin of suborbital very short, extending to vertical at front edge of pupil; margin of preopercle smooth, the prominent corner slightly angular. Basibranchial attachment close to hypohyal attachment compared to other species. The urohyal dorsally viewed shaped like an unbalanced rhombus. Dorsal expansion tendon-connecting part for clavicle, remarkably developed; ventral side fairly expansion laterally (Fig. 3, A).

The ceratohyal and epiphyal lightly joined. The branchiostegal rays suspended from the vertrolateral surface of the epiphyal ceratohyal-hypohyal complex; six branchiostegals, the first two rays narrower and weaker, and succeeding four rays progressively longer (Fig. 3, B).

The paired lower pharyngeals (Fig. 4, A) fused mesially to form a broad Y-shaped bone; covered

Table 1. Comparison of meristic characters of *Chromis analis*

Meristic characters	Present study	Allen (1975)	Randall <i>et al.</i> , (1981)
Number of specimens	8	-	15
Dorsal rays	XIII, 12-13	XIII, 11-12	XIII, 11-13
Anal rays	II, 11-13	II, 11-12	II, 11-12
Pectoral rays	18-20	18	18-20
Caudal spinules	3/3	-	3/3
Tubed lateral-line scales	18-19	17	16-19
Lateral-line above scales	3-4	-	3-4
Lateral-line below scales	8-9	-	9-10
Gill rakers	6-7+18-20	25+28	6-7+17-19
Posterior lateral pored scales	7-11	-	-
Predorsal bone	3	-	-
Vertebrae	11+15	-	11+15
Branchiostegal rays	6	-	6

Table 2. Comparison of proportional measurement characters of *Chromis analis*

Characters	Present study	Randall <i>et al.</i> , (1981)
Number of specimens	8	15
Standard length (SL)	82.8~102.4mm	45.5~141.0mm
% to SL		
Body depth	53.1~58.4	49.5~57.8
Head length	28.4~32.6	28.5~34.3
Eye diameter	10.0~11.4	9.0~11.0
Interorbital width	10.7~13.0	10.6~13.9
Snout length	5.6~7.4	8.3~10.6
Caudal peduncle depth	15.3~16.5	14.0~16.7
Longest dorsal spine length	15.3~17.7	13.7~21.6
Second anal spine length	17.0~21.1	17.1~24.3
Caudal fin length	30.4~34.6	-
Pelvic fin length	29.2~34.2	-

with dorsal surface by large and heavy conical teeth posteriorly and by blunt molariform teeth anteriorly.

Scales finely ctenoid; anterior tubed part of lateral line ending below base of last dorsal spine; head fully scaled except lips, a narrow zone on snout above upper lip; spinous portion of dorsal fin with a basal sheath of one scale rows into which

the spines fold; a column of scales on each interspinous membrane of dorsal fin extending about one-two distance to ray tips; scales on soft portion of anal fin similar but extending more than one-two distance to rays tips; very small scales on caudal fin base and pelvic fin base; pelvic fins with a triangular, midventral scaly process and a slender, pointed axillary scale, each about one-two length of

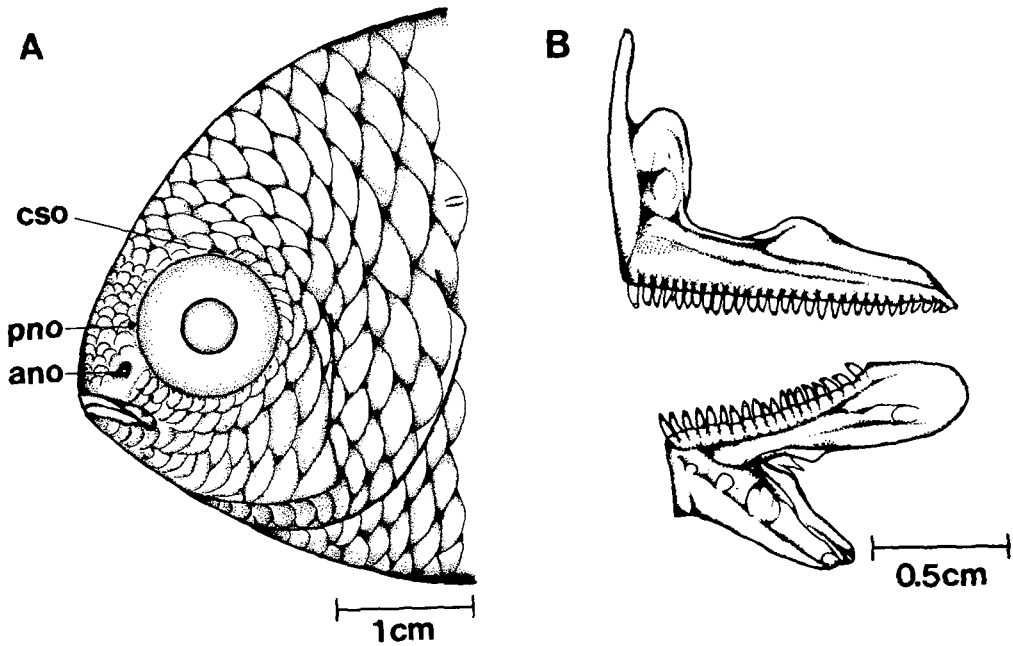


Fig. 2. Head part and jaw teeth of *Chromis analis*. ano, anterior nasal opening; cso, crescent opening of supraorbital canal; pno, posterior nasal opening.
 A. Scales covering the anterior nasal opening and the crescent opening of the supraorbital canal
 B. Premaxilla and dentary

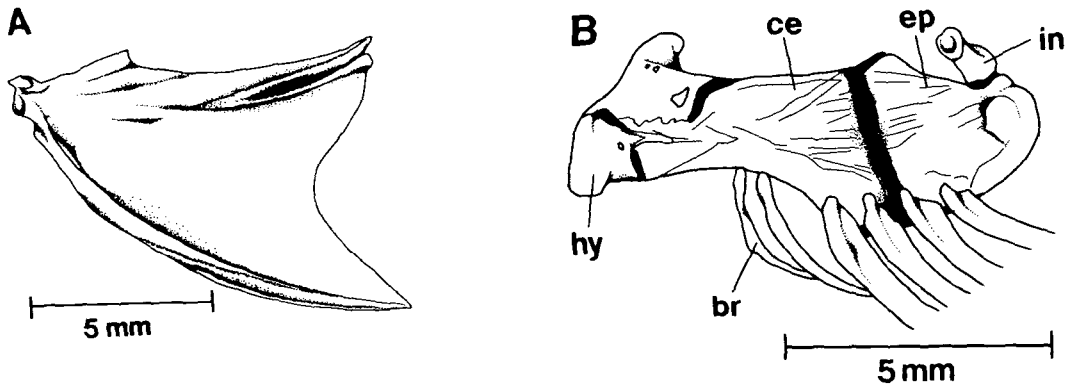


Fig. 3. The urohyal and hyoid arch of *Chromis analis*. br, branchiostegal ray; ce, ceratohyal; ep, epihyal; hy, hypohyal; in, interhyal.
 A. The urohyal
 B. The ceratohyal and epihyal are lightly joined, and there are six branchiostegals

pelvic spine.

Origin of dorsal fin above anterior base of pectoral fin; dorsal spines slender; first dorsal spine 6.6~9.1% SL; second dorsal spine 11.0~13.4% SL;

third or fourth dorsal spine usually longest, the spined length 15.3~17.7% SL; posterior margin of soft dorsal fins rounded, base of spinous portion of dorsal fin about three-fourth total length of fin

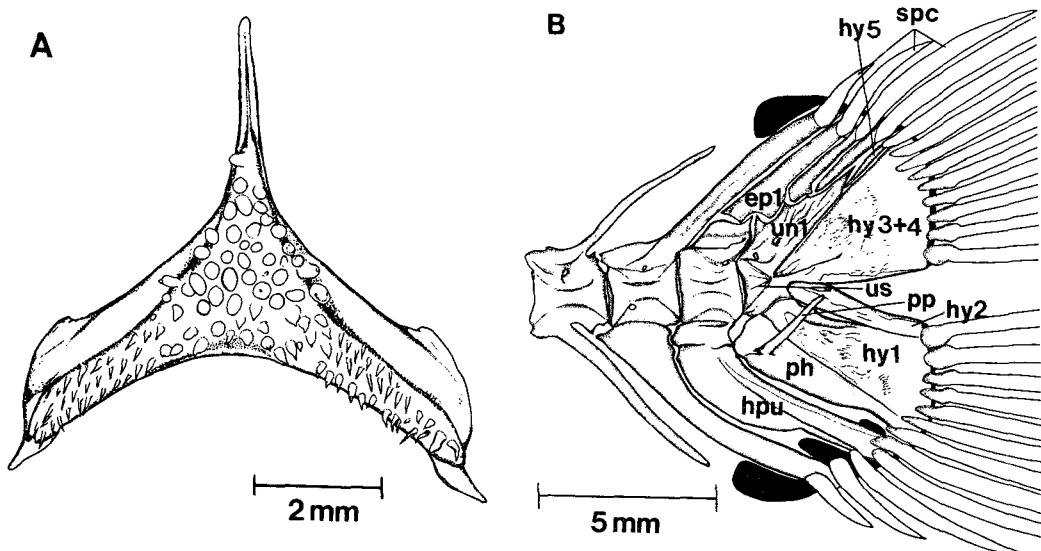


Fig. 4. The lower pharyngeal bone (dorsal view) and caudal skeleton of *Chromis analis*. ep, epural; hpu, haemal spine of preural centrum; hy, hypural; ph, parhypural; pp, hypurapophysis; un1, first uroneural; spc, spiniform procurrent caudal ray.

- A. The lower pharyngeal bone is covered with conical teeth
 B. Spiniform procurrent caudal ray 3 and procurrent caudal ray 5+5

base; origin of anal fin below base of tenth dorsal spine; second anal spine 17.0~21.1% SL; posterior margin of anal fins rounded; caudal fin forked but longest rays not filamentous; procurrent caudal rays 5+5 (Fig. 4, B); first pelvic ray longest, filamentous, reaching beyond anus to the origin of anal fin, 29.2~34.2% SL.

Distribution and Habitat: *Chromis analis* is found in moderately deep water, and this fish is not common in less than 30m (Randall *et al.*, 1981). It is found on steep outer reef slopes (Allen, 1975). *Chromis analis* has been found to date from the East Indies and Melanesia to southern Japan (Randall *et al.*, 1981). This fish which is solitary, or in small to large aggregations feeds on zooplankton. Males prepare nests on bare rock or dead coral after removing algae and fanning away sand with rapid caudal movements (Randall *et al.*, 1981).

Remark: There are few groups of coral reef fishes which are more numerous than the damselfish family Pomacentridae with regards to both number of individuals and species. It is estimated that there are at least 200 forms inhabiting the world's tropical oceans (Allen, 1975).

The generic name *Chromis* was first established by Cuvier (1814), and first used in binominal nomenclature by Cuvier (1815). The correct gender for *Chromis* is feminine (Emery, 1975). This species belong to the genus *Chromis* because of the following characteristics: teeth conical, the procurrent spiniform caudal rays 2~3 (Randall *et al.*, 1981).

The elongated body, forked caudal fin and relatively small mouth (with conical teeth) in many of the species represent specialized adaptations for plankton feeding and a more open-water mode of life (Allen, 1975). In the original description, Cuvier and Valenciennes (1830) recorded *Heliastes analis* collected at Ambonia and no illustration was included. Bleeker (1877) who first correctly used the binomial nomenclature of *Chromis* as masculine synonymized *Heliastes*, *Furcaria*, *Heliastes* and *Ayresia* with *Chromis*. Since then, the name *Chromis* has been used by many authors.

Chromis analis was often misidentified by Japanese authors, Kamohara (1960), and Masuda *et al.* (1975). Smith (1960) reported *Chromis analis* from Baixo Pinda, East Africa, but Randall *et al.* (1981)

proved that it was a misidentification. *Chromis analis* is very similar to *C. xanthochir* (Bleeker) which is known only from Indonesia, Philippines, Palau Islands, New Guinea, New Britain and the Solomon Islands in the Indo-Malayan region. *Chromis analis* differs from *C. xanthochir* in having one more dorsal soft rays (12~13, compared to 11 for *C. xanthochir*). These two species are easily distinguished by caudal coloration.

This species, *Chromis analis* belongs to the genus *Chromis* which is generally characterized by upper and lower procurrent spiniform caudal rays 3/3, depth of body length 53.1~58.4 and golden or brown yellowish body and fin color in this study.

Most characteristics of the present specimens conform well to the original description of *Chromis analis* by Cuvier. We propose "*Norang-ja-ri-dom*" as a Korean name for the *Chromis analis*.

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1994년 2월 18일 접수

1994년 3월 12일 수리

한국산 자리돔속 어류 1 미기록종, *Chromis analis*

김용억 · 고정락 · 김진구

부산수산대학교 해양생물학과

1993년 4월부터 8월까지 제주도에서 자리돔과 어류를 채집하여 조사하던 중 한국에는 아직 보고 되어 있지 않은 자리돔속의 어류 *Chromis analis* 8개체가 제주도 서귀포와 모슬포연안에서 채집되었기에 이를 보고한다. *Chromis analis*는 체장이 82.8~102.4mm로서 자리돔과 어류 중에서는 상대적으로 크며 본종의 외부형태는 다른 자리돔속 어류와 비슷하나 체장에 대한 체고의 비가 54~58%에 이르며 특히 체색이 자리돔속 어류 가운데서도 가장 선명한 노란색을 띠는 점에서 동일속의 자리돔 *Chromis notatus*와 잘 구별되어진다. 본 종의 한국명은 “노랑자리돔”으로 명명한다.